CLAIMS

1. A mobile cellular telecommunications network employing macrodiversity,

wherein a mobile station can establish a plurality of radio links with cells in the network,

wherein the cells of the network are considered in groups,

and wherein, when determining whether to establish a new radio link between a mobile station and a new cell, the network applies a quality criterion to the new link, which depends on whether the new cell belongs to any group with which the mobile station does not already have a link.

2. A mobile cellular telecommunications network as claimed in claim 1,

wherein the network applies a more easily satisfied criterion to the establishment of a new link with a cell in one or more groups with which the mobile station already has a link, and a less easily satisfied criterion to the establishment of a new link with a cell in a group with which the mobile station currently has no link.

3. A mobile cellular telecommunications network as claimed in claim 1,

wherein the quality criterion relates to a signal quality level.

4. A mobile cellular telecommunications network as claimed in claim 1,

wherein the quality criterion relates to a longer time period for which a signal quality level is satisfied.

5. A mobile cellular telecommunications network as claimed in claim 1,

wherein a plurality of layers of groups can be defined, such that each cell may be in one group within

each layer.

6. A mobile cellular telecommunications network as claimed in claim 5,

wherein cells associated with one base station are considered to be in the same group.

7. A mobile cellular telecommunications network as claimed in claim 5,

wherein cells associated with one radio network controller are considered to be in the same group.

8. A mobile cellular telecommunications network as claimed in claim 5,

wherein cells associated with a first base station are considered to be in a first group;

wherein cells associated with a second base station are considered to be in a second group;

wherein cells associated with a first radio network controller are considered to be in a third group; and

wherein cells associated with a second radio network controller are considered to be in a fourth group.

9. A mobile cellular telecommunications network as claimed in claim 8,

wherein, when determining whether to establish a new radio link between a mobile station and a new cell:

the network applies a first quality criterion to the establishment of a new link with a cell associated with a base station with which the mobile station already has a link, and associated with a radio network controller with which the mobile station already has a link;

the network applies a second less easily satisfied criterion to the establishment of a new link with a cell associated with a base station with which the mobile station currently has no link; and

the network applies a third still less easily satisfied criterion to the establishment of a new link with a cell associated with a radio network controller with which the mobile station currently has no link.

10. A mobile cellular telecommunications network as claimed in claim 1, wherein each mobile station has an active list of cells to which it has radio links, and the criteria for establishing a new radio link are set relative to the quality of the radio links to cells on the active list.

11. A mobile cellular telecommunications network as claimed in claim 1, which uses Code Division Multiple Access.

12. A method of controlling a cellular telecommunications network using macrodiversity, wherein a mobile station can establish a plurality of radio links with cells in the network, and

wherein the cells of the network are considered in groups,

the method comprising determining whether to establish a new radio link between a mobile station and a new cell by applying a quality criterion to the new link, which depends on whether the new cell belongs to any group with which the mobile station does not already have a link.

13. A method as claimed in claim 12, comprising applying a more easily satisfied criterion to the establishment of a new link with a cell in one or more groups with which the mobile station already has a link, and a less easily satisfied criterion to the establishment of a new link with a cell in a group with which the mobile station currently has no link.

14. A method as claimed in claim 12, wherein the quality criterion relates to a signal quality level.

15. A method as claimed in claim 12, wherein the

quality criterion relates to a longer time period for which a signal quality level is satisfied.

16. A method as claimed in claim 12, wherein a plurality of layers of groups can be defined, such that each cell may be in one group within each layer.

17. A method as claimed in claim 16, wherein cells associated with one base station are considered to be in the same group.

18. A method as claimed in claim 16, wherein cells associated with one radio network controller are considered to be in the same group.

19. A method as claimed in claim 16, wherein cells associated with a first base station are considered to be in a first group;

wherein cells associated with a second base station are considered to be in a second group;

wherein cells associated with a first radio network controller are considered to be in a third group; and

wherein cells associated with a second radio network controller are considered to be in a fourth group.

20. A method as claimed in claim 12, comprising, when determining whether to establish a new radio link between a mobile station and a new cell:

applying a first quality criterion to the establishment of a new link with a cell associated with a base station with which the mobile station already has a link, and associated with a radio network controller with which the mobile station already has a link;

applying a second less easily satisfied criterion to the establishment of a new link with a cell associated with a base station with which the mobile station currently has no link; and

applying a third still less easily satisfied criterion to the establishment of a new link with a cell associated with a radio network controller with which the mobile station currently has no link.

21. A method as claimed in claim 12, wherein each mobile station has an active list of cells to which it has radio links, and the criteria for establishing a new radio link are set relative to the quality of the radio links to cells on the active list.

22. A method as claimed in claim 12, wherein the network uses Code Division Multiple Access.

23. A mobile cellular telecommunications network using macrodiversity,

wherein a mobile station can establish a plurality of radio links with cells in the network, the cells with which the mobile station has established radio links being defined as an active set,

wherein the cells of the network are considered in groups,

and wherein the network determines whether to establish a new radio link between a mobile station and a new cell, by determining whether a quality value of the new radio link exceeds a threshold set at a difference level below a best cell in the active set, the size of the difference level depending on whether the new cell belongs to any group to which no member of the active set belongs.

24. A method of controlling a mobile cellular telecommunications network using macrodiversity,

wherein a mobile station can establish a plurality of radio links with cells in the network, the cells with which the mobile station has established radio links being defined as an active set, and

wherein the cells of the network are considered in groups,

the method comprising determining whether to establish a new radio link between a mobile station and a new cell, by determining whether a quality value of the new radio link exceeds a threshold set at a difference level below a best cell in the active set, the size of the difference level depending on whether the new cell belongs to any group to which no member of the active set belongs.